

# Anamary Leal

## Curriculum Vitae

Assistant Professor  
Computer Science Department  
Sonoma State University  
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## Education

Virginia Tech	<b>Ph.D.</b> , Computer Science & Application GPA: 3.82	Blacksburg, Virginia Fall 2009 – Sum 2017
University of Central Florida	<b>B.S.</b> , Computer Science, Magna Cum Laude Minor: Engineering Leadership GPA: 3.879	Orlando, Florida Fall 2004 – Spring 2009

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## Honors, Awards and Scholarships

- California State University/Adobe Digital Literacy Grant: \$3K to support design in makerspace class: 2020
- RSCAP summer Fellowship: \$5K. “Designing Technology for Negotiating Material Description,”: Fellowship for writing research publications
- Instructional Innovation Grant: \$1500: Students’ Last Bow at SSU: Best Practices in Showcasing Senior Capstone: Internal Grant May 2018
- SSU Faculty SOURCE Award. \$2000 for student travel and supplies. Spr 2018
- NSF Graduate Research Fellowship Awardee: \$30,000 and tuition waiver for three years:- Spr 2010 - 2013
- GEM Doctoral Fellowship Recipient: All Semester Tuition Waiver, \$14,000 , Fall 2009 - 2010
- Google Hispanic Scholarship Recipient: \$10,000 Award, given to 20 per year, Fall 2009 – 2010
- Member of the winning team in the Symposium of 3D User Interfaces Grand Prize Contest 2010
- Virginia Tech Institute Student grant: \$500 towards research funding Fall 2015
- Honors in the Major Scholarship Recipient: Research grant for one's undergraduate thesis, Fall 2008
- Grace Hopper Scholarship: Fully funded to attend prominent Computing Conference, 2008 & 2010
- Hispanic Heritage Scholarship - the Hispanic Chamber of Commerce of Metro Orlando, Fall 2007 & 2008
- Progress Energy Leadership Institute Scholarship, Fall 2007
- Research and Mentoring Program Scholar, Fall 2007 – May 2009
- Ronald E. McNair Post- Baccalaureate Scholar, Fall 2006 – May 2009
- Pegasus Gold High Achievement Scholarship, Fall 2004
- Bright Futures Academic Scholars Award, Fall 2004 – May 2009
- Deans List, Fall 2004 - May 2009
- Burnett Honors College Student, Fall 2004 – May 2009
- International Baccalaureate Diploma Recipient, Spring 2004
- High School Graduating Salutatorian, Spring 2004

## Professional History

<b>Assistant Professor</b> , Computer Science Department, Sonoma State University	Fall 2017-current
<b>Graduate Research Assistant</b> , Computer Science Department, Virginia Tech	October 2009-Aug 2017
<b>Instructor</b> , Computer Science Department, Virginia Tech	Fall 2015, Sum-Fall 2016
<b>User Experience Software Engineer</b> , Intel Corporation	May 2013-August 2013

- Researched how to design and develop a “hacker” or do-it-yourself camera array using commodity hardware and what kinds of experiences would be enriched by such a camera
- Developed using Matlab, C++, OpenCV, computer vision and image processing techniques
- Led a successful multi-disciplinary team that started with major communication issues to delivering System demos, camera viewers and presentations to internal and external audiences
- Awarded top rating for performance, given to select interns for multi-disciplinary leadership

**Visiting Research Assistant**, University of Southern California May 2011 – Aug 2011  
**Usability Engineer Intern**, MITRE Corporation May 2009 – July 2009

- Researched multi-touch technology, Microsoft Surface, brainstormed on ways the technology could support live and remote collaboration of documents in command centers and visual analysts
- Led a team of 3 in designing and developing a multi-touch, multi-user, document and image editor

**Costume Shop Assistant**, School of Performing Arts, Virginia Tech Aug 2014-May 2015

- Built costume pieces, accessories and more in 4 major department productions
- Taught and helped students hand sewing techniques, use various machines and help in their projects
- My full-build costumes have won Best Recreation, 1<sup>st</sup> place craftsmanship, judges award

**Student Researcher**, Ronald E. McNair Scholars Program University of Central Florida May 2007 – May 2009  
**Lab Assistant**, University of Central Florida, Computer Science Department May – Aug 2006

- Developed 3d graphics program that renders the UCF campus and shows energy usage of buildings
- Clients were impressed with the tool, and wished to implement it with further enhancements

**Computer Specialist**, University of Central Florida, Faculty Center May 2005-November 2007

- Collaborated with a team to produce 3 websites, several tutorials for software/HTML
- Supported faculty and administration with technical issues and questions related to classroom, software
- Developed, researched, and publicized department's endorsement of video streaming software for teaching

**Undergraduate Teaching Assistant**, University of Central Florida Summer 2005 & 2006

## Research

### Academic and Research Interests

Human-Computer Interaction, Maker Culture, Tangible and Embodied Interaction, Ubiquitous Computing, Gaming Research, 3D User Interfaces,

### Publications

#### *Theses*

**Title:** Negotiating Material Description Through Technology

**Degree:** Ph.D

**Committee:** Steve R. Harrison., Chair

Dr. Kurt Luther

Dr. Ben Knapp

Dr. Josh Tanenbaum

Mrs. Jane Stein

**Date Awarded:** Summer 2017

**University:** Virginia Tech

**Title:** Exploring the Effectiveness of 3D File Browsing Techniques for File Searching Tasks

**Degree:** Honors in the Major Undergraduate Thesis

**Committee:** Dr. Joseph J. LaViola Jr., Chair

Dr. Charles E. Hughes

Dr. Lori Walters

**Date Awarded:** May 2009

**University Awarded:** University of Central Florida

#### *Peer-Reviewed Conferences*

Leal, A., Hernandez-Mata, S., Donley, K., Sanchez, Y., Olson, J., Harrison, S. R., Luther, K., Tanenbaum, J., Stein, J., and Knapp, K. "Implications for Designing for Ambiguity". CHI 2020 conference. (in-progress)

Ivanoff, N., Bowman, H., Elkins, A., Leal, A. "Imitating Tangible Craft Practices Online: A Study of Communicating Craft Knowledge on Social Media" CHI 2020 conference. (in-progress)

**Leal, A.,** Harrison, S. R., Luther, K., Tanenbaum, J., Stein, J., and Knapp, K. "'Silky', 'Rough', and 'Gritty': Understanding and Designing for Ambiguous Topics" ACM Human Computation Conference 2019. (in progress)

**Leal, A.** "Negotiating Ambiguity in Describing Fabrics Through Technology." Tangible and Embodied Interaction Conference 2017: Doctoral Consortium Short Paper. March 2017.

**Leal, A.** "Negotiating Ambiguity in Describing Fabrics Through Technology." Tangible and Embodied Interaction Conference 2017: Doctoral Consortium Short Paper. March 2017.

**Leal, A.,** Schaefer, L., Bowman, D., Quek, F., and Stiles, C. "3D Sketching Using Interactive Fabric for Tangible and Bimanual Input." In the proceedings of Graphics Interface 2011. May 2011. (31% acceptance rate)

**Leal, A.,** Wingrave, C., and LaViola, J. "Initial Explorations into the User Experience of 3D File Browsing", Proceedings of HCI 2009, 339-344, September 2009.

LaViola, J., **Leal, A.,** Miller, T., and Zeleznik, R. "Evaluation of Techniques for Visualizing Mathematical Expression Recognition Results", In the Proceedings of Graphics Interface 2008, 131-138, May 2008.

*Journals*

**Leal, A.** and Bowman, D. A. "3D Sketching and Flexible Input for Surface Design: A Case Study". SBC Journal on 3D Interactive Systems, Sept 2014.

McMahan, R., Regan, E., **Leal, A.,** Beaton, B., and Bowman, D. "Considerations for the Use of Commercial Video Games in Controlled Experiments." Entertainment Computing, Volume 2, Issue 1, pg. 3-9, 2011.

P. Figueroa, Y. Kitamura, S. Kuntz, L. Vanacken, S. Maesen, T. D. Weyer, S. Notelaers, J. R. Octavia, A. Beznosyk, K. Coninx, F. Bacim, R. Kopper, **A. Leal,** T. Ni, and D. A. Bowman. "3DUI 2010 contest grand prize winners." IEEE Computer Graphics and Applications, 30:86–96, 2010.

*Workshop Position Papers*

**Leal, A.,** Harrison, S. R., Luther, K., Tanenbaum, J., Stein, J., and Knapp, K. "Cotton Or Silk": A View into Negotiating Fabric Description Remotely". At Computer-Human Interaction Conference 2018 Workshop: Making, DIY & Participatory Design.

**Leal, A.** and Harrison, S. "Practical Meaning Construction of Fabric Materials in Maker Situations". Position Paper at CHI 2016 Workshop: Fabrication & HCI: Hobbyist Making, Industrial Production, and Beyond.

**Leal, A.** "Championing Ambiguity in HCI Systems Design". People, Systems, Interaction: What Comes After HCI Virginia Tech Workshop 2016.

**A. Leal,** A. D. Wood, D. A. Bowman. "Pixelbending: Using Nuanced, Continuous Gestures with Off-the-Shelf Tracking Devices." IEEE Virtual Reality Workshop on Off-the-Shelf Virtual Reality 2013, March 2013.

*Technotes*

McMahan, R., Joel, A.J., Lazem, S., Beaton, R.J., Machaj, D., Schaefer, M., Silva, M. G., **Leal, A.,** Hagan, R., and Bowman, D. "Evaluating Natural Interaction Techniques in Video Games". In proceedings of Symposium of 3D User Interfaces 2009. March 2009.

*Demos*

**Leal, A.,** Harrison, S.R. "How do you match virtual fabric with real-world fabric?". Virginia Tech's Institute for Creative Arts and Technologies Day 2016.

**Leal, A.,** Harrison, S.R. "Ambiguities in describing fabric" Virginia Tech Center for Human-Computer Interaction 20-Year Celebration, Oct 2015.

**Leal, A.,** Harrison, S.R. "How do you describe texture?". Virginia Tech's Institute for Creative Arts and Technologies Day 2015.

#### *Posters*

Ivanoff, N., Bowman, H., Elkins, A., **Leal, A.** "Imitating Tangible Craft Practices Online: A Study of Communicating Craft Knowledge on Social Media" Designing Interactive Systems 2019 Work-in-Progress submission.. (submitted)

Sanchez, A., Donley, K., **Leal, A.** "Design Affordances of Nintendo Labo: A Case Study on a Craft Technology". Poster submission for ACM's Creativity and Cognition 2019 conference (submitted).

**Leal, A.,** Bowman, D.. "Flexible Input for 3D Surface Design" IEEE Virtual Reality 2013, March 2013.

**Leal, A.,** Bowman, D.. "3D Sketching and Flexible Input for Surface Design: A Case Study" Symposium of 3D User Interfaces 2013, IEEE.

**Leal, A.,** Bowman, D.. "Design Considerations for Fabric-Based Input for Surface Design" Symposium of 3D User Interfaces 2012, IEEE.

**Leal, A.,** Bowman, D.. "3D Sketching Interaction Metaphors Using Fabric for Surface Design." Grace Hopper Celebration of Women in Computing 2011, ACM.

**Leal, A.,** Bowman, D., and Quek, F. "Innovative 3D Surface Design Using Fabric: 3D Tangible, Two-Handed Direct Input." CHI 2010, at CHIME Workshop & Grace Hopper Conference 2010, ACM.

**Leal, A.,** LaViola, J. "Exploring the Effectiveness Of 3-D File Browsing Techniques for File Searching Tasks." Showcase of Undergraduate Research Excellence: Competition for Undergraduate Research: April 4, 2009. Won Honorable Mention.

#### *Doctoral Forums*

(Submitted) **Leal, A.,** Harrison, S. R. "Negotiating Ambiguity in Describing Fabrics Through Technology". Doctoral Consortium at Tangible and Embodied Interaction 2017.

**Leal, A.,** Harrison, S. R. "Negotiating Ambiguity in Describing Fabrics Through Technology". Doctoral Consortium at Tapia Celebration for Diversity in Computing 2015.

**Leal, A,** Bowman, D.A.. "Flexible Input for Surface Design". Virtual Reality Doctoral Consortium held at Virtual Reality 2013.

#### *Presentations*

**Leal, A.** "Negotiating Material Description through Technology". Invited speaker at:

- Berkeley Institute of Design Seminar talks, 2018
- US Institute for Theater Technologies: as an Engineering Thesis Award, 2018

**Leal, A.** "Negotiating Ambiguity in Describing Fabrics through Technology." Research campus talk, Various campus visits. 2016-2017.

## **Leal, A.** "Evaluation of Techniques for Visualizing Mathematical Expression Recognition Results"

- The 2008 Google Workshop for Women Engineers. Google, Inc, Ph.D Research Panel. February 23, 2008
- 15th Annual McNair Scholars Research Conference. University of Maryland Baltimore County, Oct 2007.
- Showcase of Undergraduate Research Excellence: Competition for Undergraduate Research: April 4, 2008

## **Talks by Research Students**

- SSU SST Research Symposium 2018:
  - o Yasmine Sanchez, Jeff Olson, Keegan Donley, Sergio Hernandez Mata: "Understanding Makers in Material Understanding Remotely"
  - o Adrain Smith. "Social Engineering – How the design of a community platform influences its users"

## **Selected Projects**

Principal Researcher, Sonoma State University

Fall 2017 - current

- Exploring how to design technologies that support novice crafters seeking tangible, hands-on craft knowledge
- Currently studying the strengths and limitations of current technology to support novice crafting communities, such as the interdisciplinary communities of cosplay, or costume play
- Led interdisciplinary teams of undergraduate students from sociology, computer science, business, among others

Graduate Student Researcher, Virginia Tech *with* Steve Harrison

November 2009 – Sum 2014

- Exploring how to design technologies that take advantage of ambiguity in design domains, to help designers explore materials
- Inspiration came from the challenge of costume designers shopping online for fabrics, when different designers describe fabric in different and contradictory ways
- Ran crowdsourced studies exploring how people describe fabric in different representations, with a interdisciplinary team
- Designed and evaluated interfaces varying in interaction and fabric representation, delivering interface design guidelines

Graduate Student Researcher, Virginia Tech

November 2009 – Sum 2014

- Exploring fabric to create surfaces, like in garments, costumes, cars, hulls using 3D interaction
- Ran exploratory and user studies to evaluate using fabric as a sketch-in-the-air medium with a motion capture system, OpenGL, and graphical/speech recognition user interface
- Designed and developed system, 2 experimental designs, 10 fabric prototypes

Visiting Research Assistant, *with* Dr. David Krum, University of Southern California

May 2009 – August 2009

- Social network graphs can be massive, and large, yet essential to understand a target person, terrorist organizations, threats
- Researched how to improve understanding of social network graphs through tangible approaches
- Developed on Microsoft Surface a full experimental system to evaluate how users understand graphs, conducted user study, data analysis, and resulting presentation and research paper

Research Assistant, *with* Dr. Francis Quek, Virginia Tech

October 2009 – July 2010

- Explored how non-linear storytelling and multimedia can be used to aid children in becoming more creative
- Performed user studies, data collection, analysis, and ongoing writing of publications
- Assisted in writing an NSF REECE Proposal for the project, collaborating with interdisciplinary faculty between universities

User Experience Software Engineer *with* Oscar Nestares, Lucas Answorth, Intel Corp.

May 2013-August 2013

- Researched how to design and develop a “hacker” or do-it-yourself camera array using commodity hardware and what kinds of experiences would be enriched by such a camera
- Developed using Matlab, C++, OpenCV
- Learned quickly computer vision and image processing techniques to contribute in all design and development stages of the project
- Led a successful multi-disciplinary team that started with major communication issues to delivering System demos, camera viewers and presentations to internal and external audiences

Student Researcher, *with* Dr. Joseph LaViola, University of Central Florida(UCF) May 2007 – May 2009

- Self-driven, individually proposed Honors in the Major thesis: Research undergraduate thesis program
- Focuses on multiple techniques that visually arrange 2D files, such as papers and pictures, in a 3D Room-like User Interface, such as stacking, laying them as though in a bulletin board, etc
- Written Honors thesis IRB proposals, experimental designs, experimental system and paper for HCI 2009

Student Researcher, *with* Dr. Joseph LaViola, Ronald E. McNair Scholars Program, UCF May 2007 – April 2008

- Responsible with collaborating with mentor and faculty at Brown University, writing the Research Proposal, IRB proposal, and experiment protocol
- Conducted experiment, gathered and analyzed results, and drew conclusions and implications with mentor.
- paper published at Graphics Interface 2008

## Teaching

**Assistant Professor**, Computer Science Department, Sonoma State University Fall 2017

- **Dream, Make, Innovate:** SCI 220: Sophomore level, 24-48 students. General education, lower-division service learning course. Teaching design, inquiry, craft and maker techniques, applied to a local non-for-profit community organizations
- Introduction to Programming: Taught classes of 120 students, the first introductory class in Computer Science major
- Operating Systems: taught two sections of 18-22 students
- Introduction to Programming: Taught classes of 120 students, the first introductory class in Computer Science major
- Senior Design class: senior-level capstone course for significant software team projects
- Introduction to HCI: Writing intensive course on designing technology for people

**Instructor**, Computer Science Department, Virginia Tech Fall 2015, Sum II & Fall 2016

- Taught classes of 35-90 students, the first introductory class in Computer Science major
- Taught introductory object-oriented programming, problem solving, Java, with 5 programming assignments 10 homeworks and 11 labs, to Computer Science majors-minors and out-of-majors
- Led a group of graduate and undergraduate teaching assistants
- Received excellent reviews by faculty assessment of teaching

Burnett Honors College Summer Institute Teaching Assistant Summer 2005 & 2006

- Taught basic Computer Science concepts to high school students for 3 full weeks
- Created, modified lesson plans and homework assignments daily
- Collaborated with Professor, TA partner, and other TA's on lessons, teaching strategies
- Created, and graded homework assignments and tests as a group with TA partner

Progress Energy Leadership Institute Scholar: Science Lecture Fall 2007 - Spring 2008

- Applying our leadership skills towards our final project of leading a class of 3<sup>rd</sup> - 4<sup>th</sup> graders to learning about engineering through a series of demonstrations and games

- Collaborated with team & teacher to create 2 lesson plans, demonstration materials, and resulting final paper and presentation

## Professional Development

NSF CISE CAREER Workshop

April 2018

- Held at NSF headquarters to educate early career faculty on how to apply to one of the most prestigious early investigator awards by the organization

Accepted to participate the New Educators Workshop at Association for Computing Machinery (ACM) Special Interest Group in Computer Science Education Conference (SIGCSE) 2018. (Upcoming Feb 2018)

- Workshop is designed for new faculty to learn about being an effective educator, researcher and professor.
- Awarded additional \$500 for travel

Accepted to participate in the Computer-Human Interaction Conference's Early Career Symposium May 2018

- 1-day event for professional development at premiere research conference
- Workshop designed for new faculty in HCI to guide them on teaching, research and service

Acceptance and Participation in the SSU STEM Faculty Learning Program: (\$1500) Faculty Center

- Learn about and apply active learning techniques for STEM fields
- Includes opportunities for course feedback and course redesign

Seminars attended include:

- Moodle: Gradebook Assessment, by SSU's Faculty Center
- New Faculty Monthlies: Tips on Crafting the RTP Self Assessment, by SSU's Faculty Center
- Lunch & Learn: Panel tips from Pros on Grant Writing, by Office of Faculty Research and Sponsored Programs
- Undergraduate Research Projects Funding Information Session
- Lunch & Learn: Finding Funding Opportunities, by Office of Faculty Research and Sponsored Programs

## Grants

Instructional Innovation Grant: \$1500: Students' Last Bow at SSU: Best Practices in Showcasing Senior Capstone Projects May 2018

- To fund the documentation for a showcase guide and a demo-focused showcase experience for senior students with a final project component.
- Funds a study into showcases in other departments and universities, best practices, logistics and developing a timeline of how any department can do a showcase at SSU, resulting in documentation for any faculty

## Presentations

Leal, A, and Yee, K. "Transform Live Lectures into Online Audio/Video Lectures Using AuthorPoint." Summer Faculty Development Conference, Faculty Center for Teaching and Learning, University of Central Florida, May 2007.

## Service

### Institutional Service

Co-organizer of Girls Tinker Academy:

Summer 2018

- Co-hosting a mini-summer camp for 24 middle school girls to make and build, with a focus on STEM

- Tasks included building lesson plans, schedule organization, resource and student assistant management, and final showcase
- Recognized publically by the regional newspaper([link](#)) and university President Sakaki ([link](#))

Co-Organizer of CSU Maker Convening: May 2018

- Multiple-school collaboration of bringing together colleagues from sister campuses to focus on the pedagogy and organization of making and makerspaces.
- Supported in outreach and survey development to get formative feedback on convening content
- Site: <https://make.sonoma.edu/csumaker>

Club advisor, Virtual Reality Club Dec 2017 – current

- Club awarded Best New Organization Award by the Office of Student Involvement
- Club awarded \$2500 for funding a virtual tour project of Rohnert Park parks, impacting local community

Club advisor, Virtual Reality Club Dec 2019 – current

Presenter of Computer Science/Human-Computer Interaction. Thirty-minute demo of virtual reality, computing, supporting people through technology. Hayward Public School System high school visit. April 21, 2018

SSU's premiere at Bay Area Maker Faire: May 2018

- Organized SSU's debut at one of the biggest Maker-related faires in the world, including managing booths, organizing content for booths, and sharing SSU maker activities to the broader maker community

Panelist, "Hidden Figures" Movie and Discussion for SSU's Women in Technology Group Oct. 16, 2017

Grace Hopper Conference Co-Chair – Association of Women in Computing, Virginia Tech January 2010 – Current

- Coordinated with AWC officer, department, GHC leaders, co-chair teammate to manage & fund students
- Funded 20+ students, 10+ are first-time attendees, to plan and provide fully paid travel, hotel, and registration to Grace Hopper Celebration of Women in Computing 2010
- Contributed in making Virginia Tech have its strongest presence and representation ever in the conference

IEEE's Women in Engineering – Assistant to Travel Management to Computing Conference May – Oct 2008

- Collaborated to fund 13 students be fully-funded to attend Grace Hopper's Celebration of Women in Computing conference 2008, totaling around \$3000, from sources from university, IEEE
- UCF was represented for the first time in the conference, and the university was one of the top 10 universities represented for bringing in the most attendees for 2008

Summer Research Academy – Peer Research Mentor May – June 2007 & 2008

- Guided, taught, and mentored four science freshman to relevant to all stages of research
- Coordinated events, correspondence for the mentees
- Assigned, graded, homework and gave feedback for future research endeavors

## Research Community

Reviewer (GHC Scholarship 2018, CHI 2016, 2018, SUI 2014, VRST 2013, ICMI 2013)

Designing Interactive Systems Volunteer Day Captain

June 2014

Spatial User Interfaces Demo Co-chair & Organizing Committee

June 2013

Associate Chair (DIS 2019, 2020)

## To the Sonoma State University Computer Science Department

Presenter of Computer Science/Human-Computer Interaction. Thirty-minute demo of virtual reality, computing, supporting people through technology. Hayward Public School System high school visit. Oct 12, 2017.



## **Professional Associations**

- Association for Women in Computing (UCF and VT) – August 2004 - Current
- IEEE's Women in Engineering - UCF Student Chapter – Jan 2008 – Current
- Upsilon Pi Epsilon. Honor Society for the Computing and Information Disciplines – April 07 – Current
- Association for Computing Machinery - April 07 - Current

## **Skills**

- Programming Languages: C/C++, Java, PHP, QuickBasic, OpenGL, C#, WPF, XNA
- Formatting Languages: HTML, CSS, SMIL, LaTeX, BibTeX
- Spoken Languages: Proficiency in Spanish, Familiar with Japanese

## **Extracurricular Activities**

- Webmaster/Web Developer – August 2004 - 2005
- Game Developers Club – Spring 2006
- BHC Peer Ambassadors – Ambassadors for Freshman Orientation – Summer 2005-06
- Knitting Knights – Fall 2007
- Hobbies include: Sewing, Costume and plushie construction, Japanese Animation, Web Design

## **References**

Available on Request